	From the INTERNATIONAL BUREAU			
PCT	To:			
NOTIFICATION OF THE RECORDING OF A CHANGE  (PCT Rule 92bis.1 and Administrative Instructions, Section 422)  Date of mailing (day/month/year) 27 May 2005 (27.05.2005)	VOSSIUS & PARTNER Siebertstrasse 4 81675 Munich Germany			
Applicant's or agent's file reference	IMPORTANT NOTIFICATION			
G5466 PCT	INFORTANT NOTIFICATION			
International application No. PCT/EP2004/008964	International filing date (day/month/year) 10 August 2004 (10.08.2004)			
The following indications appeared on record concerning:      X the applicant      X the inventor	the agent the common representative			
Name and Address	State of Nationality State of Residence			
	Telephone No.  Facsimile No.  Teleprinter No.			
2. The International Bureau hereby notifies the applicant that to the person the name the ad				
KARCH, Ralf Käthe-Kollwitz-Strasse 24 63801 Kleinostheim Germany 7. Ub. 2009	5 Facsimile No.			
TEAM 14	Teleprinter No.			
3. Further observations, if necessary:				
4. A copy of this notification has been sent to:				
X the receiving Office	X the designated Offices concerned			
the International Searching Authority	the elected Offices concerned			
the International Preliminary Examining Authority	other:			
The International Bureau of WIPO	Authorized officer			
34, chemin des Colombettes 1211 Geneva 20, Switzerland	Patrick VILLECHAISE (Fax 338 8970			
Facsimile No. (41-22) 338.89.70	Telephone No. (41-22) 338 8395			

	From the INTERNATIONAL BUREAU		
PCT	To:		
NOTIFICATION OF THE RECORDING OF A CHANGE  (PCT Rule 92bis.1 and Administrative Instructions, Section 422)	VOSSIUS & PARTOMERus & Partner Siebertstrasse 4 81675 Munich Germany Hist		
Date of mailing (day/month/year) 27 May 2005 (27.05.2005)	bearb.: smt		
Applicant's onegent's file reference G5466 PCT	IMPORTANT NOTIFICATION		
International application No. PCT/EP2004/008964	International filing date (day/month/year) 10 August 2004 (10.08.2004)		
The following indications appeared on record concerning:      X the applicant     X the inventor	the agent the common representative		
Name and Address	State of Nationality State of Residence		
	Telephone No.		
	Facsimile No.		
	Teleprinter No.		
2. The International Bureau hereby notifies the applicant that the X the person the name the add	r		
Name and Address  KARCH, Ralf Käthe-Köllwitz-Strasse 24 63801 Kleinostheim Germany	State of Nationality State of Residence  DE. DE  Telephone No.		
	Facsimile No.		
	Teleprinter No.		
3. Further observations, if necessary:			
4. A copy of this notification has been sent to:			
X the receiving Office	X the designated Offices concerned		
the International Searching Authority	the elected Offices concerned		
the International Preliminary Examining Authority	other:		
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Patrick VILLECHAISE (Fax 338 8970		
Facsimile No., (41-22) 338.89.70 Form PCT/IB/306 (March 1994)	Telephone No. (41-22) 338 8395 006703864		
LOLLU LO WINDAM fixiging 1994)			

PCT		From the INTERNATIONAL BUREAU		
NOTIFICATION OF THE RECORDING OF A CHANGE  (PCT Rule 92bis.1 and Administrative Instructions, Section 422)  Date of mailing (day/month/year) 27 May 2005 (27.05.2005)	Siet 8167	SSIUS & PARTNER pertstrasse 4 75 Munich many	EINGEGANGE Vosting & Barber 06. Juni 2005 Frist hearb.:	
Applicant's or agent's file reference G5466 PCT		IMPORTANT N	IOTIFICATION	
International application No. PCT/EP2004/008964  1. The following indications appeared on record concerning:		nal filing date (day/mor August 2004 (10.08.		
X the applicant X the inventor	the age	nt the co	mmon representative	
Name and Address		State of Nationality	State of Residence	
		Telephone No.		
		Facsimile No.		
		Teleprinter No.		
2. The International Bureau hereby notifies the applicant that to the person the name the additional the additional the person the name the additional the additional the person the name the additional the additional the person the person the name the additional the additional the person the additional the person the additional the ad		change has been recor	ded concerning: the residence	
Name and Address BRIEL, Oliver Tulpenhofstrasse 25 63067 Offenbach		State of Nationality DE Telephone No.	State of Résidence DE	
Germany		Facsimile No.	· · · · · · · · · · · · · · · · · · ·	
		Teleprinter No.		
3. Further observations, if necessary:		· .		
4. A copy of this notification has been sent to:		<del>*</del>		
the receiving Office the International Searching Authority the International Preliminary Examining Authority		the designated Offices		
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized		ILLECHAISE (Fax 338 8970	
Facsimile No. (41-22) 338.89.70	Telephone	No. (41-22) 338 8395		





Patentanwälte Rechtsanwälte

Via Telefax - page(s) Fax-No. 089-2399-4465

Vossius & Partner · POB 86 07 67 · 81634 Munich · Germany

European Patent Office

MUNICH

EPO - Munich 59

08. März 2006

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DR. VOLKER VOSSIUS, Dipl.-Chem. (bis 1992; danach in anderer Kanzlei) DR. PAUL TAUCHNER, Dipl.-Chem.

DR. DIETER HEUNEMANN, Digl.-Phys. DR. PETER A. RAUH, Dipl.-Chem. DR. GERHARD HERMANN, Dipl.-Phys.

JOSEF SCHMIDT, Dipl.-Ing. DR. HANS-RAINER JAENICHEN, Dipl.-Biol. DR. ALEXA V. UEXKÜLL, M.Sc.

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**EUROPEAN PATENT ATTORNEYS** 

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BASEL OFFICE \* **EUROPEAN PATENT ATTORNEY** 

DR. WERNER BASTIAN, Dipl.-Biol.

Partnerschaftsregister Amtsgericht München PR 89

Confirmation (

Munich, March 8, 2006 WR/ISS

04 76 3974.5 Umicore AG & Co. KG Our Ref.: G5466 EP

Reference is made to the telephone conversation between Mr. Marvanne and the undersigned of March 7, 2006:

We herewith enclose a copy of our petition of today to the WIPO requesting two corrected Notifications (Forms PCT/IB/306).

**European Patent Attorney** 

Enclosure:

As mentioned above





Patentanwälte Rechtsanwälte

Via Telefax - 3 page(s) Fax-No. 0041-22-338 8970

VOSSIUS & PARTNER - POB 86 07 67 - 81634 Munich - Germany

Organisation Mondiale de la Propriété Intellectuelle Attn.: Mr. Patrick Villechaise Case postale 18

1211 Genève 20 SCHWEIZ PATENTANWÄLTE
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EUROPEAN TRADEMARK ATTORNEYS

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DR. PETER A. RAUH, Dipt.-Chem.

DR. GERHARD HERMANN, Dipt.-Phys.

JOSEF SCHMIDT, Dipt.-Ing.

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DR. FRIEDERIKE STOLZENBURG, Dipt.-Biot.

RAINER VIKTOR, Dipt.-Ing.

DR. NATALIA BERRYMAN, DIpt.-Chem.

RECHTSANWALTE

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DR. JOHANN PITZ

BARBARA GUGGENMOS, Dipt.-Chem.

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DR. URSULA ENGLBRECHT, Dipl.-Chem.

DR. PETER EINMAYR, Dipl.-Chem. DR. OLAF MALEK, Dipl.-Biol.

Basel Office \*
EUROPEAN PATENT ATTORNEY

DR. WERNER BASTIAN, Olph-Biol.

Partnerschaftsregister Amtsgericht München PR 89

EP-Patent Application 04 76 3974.5 Umicore AG & Co. KG Our Ref.: G5466 EP

COPY

DR. JORGEN MEIER, Dipl.-Biol.
DR. STEFAN FICKERT, Dipl.-Chem.
DR. KATHARINA HAAS, Dipl.-Chem.

Munich, March 8, 2006 WR/ISS

Reference is made to the telephone conversation with the undersigned of March 7, 2006.

We herewith enclose two Notifications of the recording of a change (Forms PCT/IB/306) wherein the persons Ralf Karch and Oliver Briel are mentioned as "the applicant" and "the inventor". However, they are inventors for all contracting states and applicants only for the USA. Therefore, it is requested to issue two corrected Notifications.

Dr. Rudolf Weinberger European Patent Attorney

Enclosure:

As mentioned above

•	From th	e INTERNATIONAL B	UREAU
PCT	.To:.	•	
NOTIFICATION OF THE RECORDING OF A CHANGE  (PCT Rule 92bis.1 and Administrative Instructions, Section 422)  Date of mailing (day/month/year) 27 May 2005 (27.05.2005)	Siebi	EINGEG SIUS & PARVOMERUS & ertstrasse 4 5 Munich nany Frist bearb.:	
Applicant's or agent's file reference		INADODTANT NOT	EICATION
G5466 PCT		IMPORTANT NOTI	FIGATION
International application No. PCT/EP2004/008964	1	nal filing date (day/month/yeugust 2004 (10.08.200	
1. The following indications appeared on record concerning:	<del>.</del>		·
X the applicant X the inventor	the agen	the commo	on-representative ·
Name and Address		State of Nationality	State of Residence
•		Telephone No.	
		Facsimile No.	
		Teleprinter No.	
		· · · · · · · · · · · · · · · · · · ·	
2. The International Bureau hereby notifies the applicant that the	a fallowing		
X the person the name the add		the nationality	the residence
Name and Address	-	State of Nationality	State of Residence
KARCH, Ralf Käthe-Kollwitz-Strasse 24 63801 Kleinostheim Germany		DE Telephone No.	DE
•		Facsimile No.	
		Teleprinter No.	
3. Further observations, if necessary:			
4. A copy of this notification has been sent to:	<i>:</i>	•	
X the receiving Office		X the designated Offices	concerned
the International Searching Authority		the elected Offices cor	ncerned ····· ·· ··
the International Preliminary Examining Authority		other:	
	Authorized	officer	
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland			ECHAISE (Fax 338 8970
Facsimile No. (41-22) 338.89.70	Tolophone	No. (41-22) 338 8395	

Form PCT/IB/306 (March 1994)

006703864

•	From the INTERNATIONAL BUREAU		
PCT	To:		
NOTIFICATION OF THE RECORDING OF A CHANGE  (PCT Rule 92bis.1 and Administrative Instructions, Section 422)  Date of mailing (day/month/year)	VOSSIUS & PARTNER Siebertstrasse 4 81675 Munich Germany  Frist bearb.:		
27 May 2005 (27.05.2005)			
Applicant's or agent's file reference G5466 PCT	IMPORTANT NOTIFICATION		
International application No. PCT/EP2004/008964	International filing date (day/month/year) 10 August 2004 (10.08.2004)		
1. The following indications appeared on record concerning:    X   the applicant   X   the inventor	the agent the common representative		
Name and Address	State of Nationality State of Residence		
	Telephone No.		
	Facsimile No.		
	Teleprinter No.		
2. The International Bureau hereby notifies the applicant that the X the person the name the add			
Name and Address BRIEL, Oliver Tulpenhofstrasse 25 63067 Offenbach	State of Nationality State of Residence DE DE Telephone No.		
Germany	Facsimile No.		
	Teleprinter No.		
3. Further observations, if necessary:			
4. A copy of this notification has been sent to:			
the International Searching Authority	the designated Offices concerned the elected Offices concerned		
the International Preliminary Examining Authority	other:		
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Patrick VILLECHAISE (Fax 338 8970)		
Facsimile No. (41-22) 338.89.70	Telephone No. (41-22) 338 8395		

Form PCT/IB/306 (March 1994)

006703862

## **PCT**

#### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference G5466 PCT	FOR FURTHER ACTION	Sœ item 4 bclow			
International application No. PCT/EP2004/008964  International filing date (day/month/year) Priority date (day/month/year) 28 August 2003 (28.08.2003)					
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237					
Applicant UMICORE AG & CO. KG					

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).		
2.	This REPORT consists of a total	d of 14 sheets, including this cover sheet.	
	In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.		
3.	3. This report contains indications relating to the following items:		
	Box No. I	Basis of the report	
	Box No. II	Priority	
	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	
	Box No. IV	Lack of unity of invention	
	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	
	Box No. VI	Certain documents cited	
	Box No. VII	Certain defects in the international application	
	Box No. VIII	Certain observations on the international application	
4.		ommunicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but makes an express request under Article 23(2), before the expiration of 30 months from the priority	

Date of issuance of this report
28 February 2006 (28.02.2006)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. +41 22 740 14 35

Date of issuance of this report
28 February 2006 (28.02.2006)

Authorized officer

Agnes Wittmann-Regis

Telephone No. +41 22 338 89 70

REC'D 1 0 MAR 2005

PCT

From the INTERNATIONAL SEARCHING AUTHORITY

To:

31

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing

(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference see form PCT/ISA/220

FOR FURTHER ACTION

See paragraph 2 below

International application No. PCT/EP2004/008964

International filing date (day/month/year)

Priority date (day/month/year)

10.08.2004

28.08.2003

International Patent Classification (IPC) or both national classification and IPC B01J31/22, B01J37/30, C07F15/00

Applicant

**UMICORE AG & CO. KG** 

- This opinion contains indications relating to the following items:
  - Box No. 1

Basis of the opinion

- Box No. Ⅱ
- **Priority**
- Non-establishment of opinion with regard to novelty, inventive step and industrial applicability ☑ Box No. III
- ☐ Box No. IV
- Lack of unity of invention
- Box No. V
- Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial
- applicability; citations and explanations supporting such statement
- ☑ Box No. VI
  - Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

#### **FURTHER ACTION** 2.

If a demand for International preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1 bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

For further details, see notes to Form PCT/ISA/220. 3.

Name and mailing address of the ISA:

**Authorized Officer** 

**European Patent Office D-80298 Munich** Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465

Goebel, M

Telephone No. +49 89 2399-8345



# WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No. PCT/EP2004/008964

	Box N	lo. I	Basis of the opinion
1.	With r	egard ngua(	to the language, this opinion has been established on the basis of the international application in ge in which it was filed, unless otherwise indicated under this item.
	la	ıngua	pinion has been established on the basis of a translation from the original language into the following age., which is the language of a translation furnished for the purposes of international search. Rules 12.3 and 23.1(b)).
2.	With r	egaro sary	d to any <b>nucleotide and/or amino acid sequence</b> disclosed in the international application and to the claimed invention, this opinion has been established on the basis of:
	a. typ	e of n	naterial:
		as	equence listing
		tab	le(s) related to the sequence listing
	b. for	mat o	of material:
		in v	written format
		in d	computer readable form
	c. tim	e of f	iling/furnishing:
		CO	ntained in the international application as filed.
		file	ed together with the international application in computer readable form.
		fur	nished subsequently to this Authority for the purposes of search.
3	ł	nas be copies	dition, in the case that more than one version or copy of a sequence listing and/or table relating thereto een filed or furnished, the required statements that the information in the subsequent or additional s is identical to that in the application as filed or does not go beyond the application as filed, as opriate, were furnished.

4. Additional comments:

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No. PCT/EP2004/008964

	Bo	k No. II	Priority
1.		The fol	lowing document has not been furnished:
			copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).
			translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).
		Conse	quently it has not been possible to consider the validity of the priority claim. This opinion has neless been established on the assumption that the relevant date is the claimed priority date.
2.		has be	pinion has been established as if no priority had been claimed due to the fact that the priority claim en found invalid (Rules 43 <i>bis</i> .1 and 64.1). Thus for the purposes of this opinion, the international ate indicated above is considered to be the relevant date.
3.	⊠	was no	not been possible to consider the validity of the priority claim because a copy of the priority document of available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has heless been established on the assumption that the relevant date is the claimed priority date.
4.	Add	ditional o	observations, if necessary:

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No. PCT/EP2004/008964

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability				
The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:				
☐ the entire international application,				
⊠ claims Nos. 14-15 (part)				
because:				
the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):				
the description, claims or drawings (indicate particular elements below) or said claims Nos. are so unclear that no meaningful opinion could be formed (specify):				
the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.				
no international search report has been established for the whole application or for said claims Nos. 14-15 (part)				
the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:				
the written form				
does not comply with the standard				
the computer readable form				
does not comply with the standard				
the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.				
☐ See separate sheet for further details				

#### WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No. PCT/EP2004/008964

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Yes: Claims

7-15

Claims No:

1-6

Inventive step (IS)

Yes: Claims

No: Claims

1-15

Industrial applicability (IA)

Yes: Claims

1-15

No: Claims

2. Citations and explanations

see separate sheet

#### Box No. VI Certain documents cited

1. Certain published documents (Rules 43bis.1 and 70.10)

and/or

2. Non-written disclosures (Rules 43bis.1 and 70.9)

see form 210

#### Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

International application No.

PCT/EP2004/008964

#### **Amendments:**

The amendments filed with your letter of 11.02.2003 cannot be accepted. They do not fulfil the requirements of Art. 19 or Art. 34 PCT. The former allows voluntary amendment of the claims after receipt of the International Search Report ("ISR"), while the latter allows voluntary amendment of claims/description and/or drawings during International Preliminary Examination under PCT Chapter II ("IPE"). Neither has any other basis in the PCT been invoked by the applicant.

A basis for the performed voluntary amendments is therefore **not found** in the PCT, since the ISR has not been issued yet. In the present stage of the international phase within PCT Chapter I **only corrections** of obvious errors may be made, **only after authorisation** by the competent PCT authority, cf. Rule 91 PCT. This is evidently **not the case** here.

Basis for this search opinion is therefore the application as originally filed.

#### Non-establishment of Opinion:

1. Claim 14 relates to the generic use of the defined catalyst in *any* of an *a priori infinite amount of catalytic reactions*, which breadth is neither supported by the description, nor disclosed therein (Arts. 5 and 6 PCT). Support and disclosure is only given to the extent of the envisioned catalytic reactions in the description as the only elucidation in this respect (cf. page 8, last para. to page 9, para. 2). This non-compliance with the substantive provisions is to such an extent, that the search was performed taking into consideration the non-compliance in determining the extent of the search of claim 14 (cf. PCT Guidelines 9.19).

Therefore the search was restricted to the <u>use of the defined complexes as precursors</u> to, or actual, catalysts in catalytic hydrogenations of C-C, C-O, C-N or N-N double bonds, catalytic hydroformylation, hydrosilylation.

2. Claim 15 likewise relates to the generic use of the defined catalyst within *any* conceivable preparation method for *any* type of catalyst considerable as being heterogenous, irrespective of its final structure. Again, support and disclosure within the meaning of Articles 5 and 6 PCT is only given for a part of such methods (see page 9, para. 3). This non-compliance with the substantive provisions is to such an extent, that the search was performed taking into consideration the non-compliance in determining the extent of the

International application No.

PCT/EP2004/008964

search of claim 15 (cf. PCT Guidelines 9.19).

Therefore the search was restricted to the use of the defined complexes for preparing heterogenous catalysts by immobilization of the soluble complex.

3. The parts of claims 14-15 which were not searched are not, and will not be, subject to International Preliminary Examination, irrespective of whether or not the claims are amended during any Chapter II procedure (cf. Rule 66.1(e) PCT).

#### Clarity:

Irrespective of the incomplete support of the claim (see preceding section), the subject-matter to be protected in claim 14 is also not clearly defined (Art. 6 PCT). The terminology "in catalytic reactions" leaves it open whether the defined complex is used (i) as the actual and exclusive catalyst to achieve a particular effect, i.e. catalysis of a given chemical reaction, or (ii) as a precursor for the preparation of the actual catalyst, including in situ preparation, which in turn is to perform a given catalytic reaction.

In view of the description on page 8, last para. to page 9, para. 1, and in contrast to the following paragraph commencing with "Furthermore ... complexes ... can be used", i.e. defining a further use, the above <u>interpretation (i)</u> appears to be applicable for the subject-matter to be protected by the claim and is <u>used for the present purposes</u>.

#### **Documents Cited:**

Reference is made to the following documents, cited in the international search report ("ISR"):

- D1: KOELLE, ULRICH ET AL: "Organometallic aqua complexes. Part 3. Olefin aqua complexes of rhodium(I)" CHEMISCHE BERICHTE, 128(9), 911-17 CODEN: CHBEAM; ISSN: 0009-2940, 1995, XP009044581
- **D2**: US-B1-6 291 606 (TANG BEN ZHONG ET AL) 18 September 2001 (2001-09-18)
- D3: WO 02/36261 A (IMPERIAL CHEMICAL INDUSTRIES PLC; HEMS, WILLIAM, PATRICK; HUTCHINGS, G) 10 May 2002 (2002-05-10)
- **D4**: BERGBREITER D E ET AL: "Amphoteric, Water-Soluble Polymer-Bound Hydrogenation Catalysts" TETRAHEDRON LETTERS, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 38, no. 21, 26 May 1997 (1997-05-26),

PCT/EP2004/008964

- pages 3703-3706, XP004064015 ISSN: 0040-4039
- D5: BATS, JAN W. ET AL: "Low-temperature phase of diaqua(1,5-cycloocta-diene)rhodium(I) trifluoromethanesulfonate" ACTA CRYSTALLOGRAPHICA, SECTION E: STRUCTURE REPORTS ONLINE, E60(1), M85-M87 CODEN: ACSEBH; ISSN: 1600-5368,19 December 2003 (2003-12-19), XP002319626
- D6: HASHMI, A. STEPHEN K. ET AL: "On the enantioselective rhodium-catalyzed enyne cyclization" ADVANCED SYNTHESIS & CATALYSIS, 345(11), 1237-1241 CODEN: ASCAF7; ISSN: 1615-4150, 19 November 2003 (2003-11-19), XP002319627
- D7: MOTODA DAI ET EL: "Phosphane-Free Rhodium Catalyst in an Anionic Micellar System for [4+2] Annulation of Dienynes" ANGEWANDTE CHEMIE INTERNATIONAL EDITION, vol. 43, no. 14, 24 March 2004 (2004-03-24), pages 1860-1862, XP002319460

Documents **D1** and **D4** are also acknowledged in the application. Documents **D5-D7** are cited under **Rule 70.10 PCT**. Unless indicated otherwise, the **respective passages** cited with the individual documents in the ISR **apply** in assessing these documents in the individual sections below.

#### **Novelty:**

- 1.1 The subject-matter of claim 1 appears known form D1, which discloses [Rh(diene) (H<sub>2</sub>0)<sub>2</sub>]X (diene= cod, nbd; X= OTs, BF<sub>4</sub>, OTf, SbF<sub>6</sub>, known to be non-coordinating anions) as a species present in solution (d<sub>6</sub>-acetone, CD<sub>2</sub>Cl<sub>2</sub>, THF) and resulting from rapid primary precipitation with ether from acetone solutions, on the basis of <sup>1</sup>H and <sup>17</sup>O-NMR spectroscopic determinations (cf. pages 911-913). Hence D1 provides an enabling disclosure for making and separating the title compounds (cf. PCT Guidelines 12.02). In this respect, it is irrelevant that the compound was not obtainable in D1 in crystalline form, losing one of its H<sub>2</sub>O ligands upon attempted crystallisation from acetone-ether (cf. page 914), since this operation corresponds merely to a purification and claim 1 is not restricted to the purified, i.e. crystalline, compounds.
  - D1 is silent with respect to catalysis using these compounds or derivatives thereof.
- 1.2 Document D1 also anticipates the subject-matter of claims 2-6, dependent on claim 1.

- 1.3 Therefore, the present application does not meet the criterion set forth in Article 33(2) PCT, as the subject-matter of product claims **1-6** appears to be **not novel** (cf. Rule 64(1)-(3) PCT).
- 2.1 Either of documents **D1** or **D2** may be regarded as being the closest prior art to the subject-matter of claim **7**, which documents both disclose (cf. **D1**: page 911-912) the same process for preparing [Rh(diene)(H<sub>2</sub>0)<sub>2</sub>]X (D1, D2: diene= cod, nbd; **D1**: X= OTs,BF4,OTf,SbF6; **D2**: OTs) as primary product.

  The subject-matter of claim **7** differs from this known process in that the a separately prepared solution of the silver salt is added to the Rh(I)-diene compound in an aqueous solvent mixture, instead of a solid silver salt.
- 2.2 Document **D2** may be regarded as being the closest prior art to the subject-matter of claim **14**, as presently interpreted and examined (see section Non-establishment of Opinion), and discloses the use of the similar *monoaqua* complexes [Rh(diene) (H<sub>2</sub>0)]OTs in catalytic *polymerizations of acetylenes*.

  In view of the above examination restrictions, the subject-matter of claim **14** differs from this known use in that a different starting material, i.e. the corresponding bisaqua complexes [Rh(diene)(H<sub>2</sub>0)<sub>2</sub>]X, is used as catalyst in a different chemical reaction, i.e. hydrogenations of C-C, C-O, C-N or N-N double bonds, hydroformylation or hydrosilylation.
- 2.3 Either of documents **D3** (cf. ISR and page 2, lines 30-39; page 6, lines 2-13) or **D4** (cf. page 3704) may be regarded as being the closest prior art to the subject-matter of claim **15**, as examined (see section Non-establishment of Opinion). Both documents disclose the **preparation of heterogenous catalysts** using similar **soluble cationic (diene)Rh(I) precursors**, resulting in immobilized Rh(I) complexes for use in (asymmetric) hydrogenations. The soluble precursors are preferably [Rh(cod)<sub>2</sub>]BF<sub>4</sub> (**D3**) or [Rh(cod)]OTf (**D4**).
  - The subject-matter of claim 15 differs from both of these known preparation uses in specifying the presence of two water ligands in the otherwise same cationic (diene)Rh(I) precursor to be used, i.e.  $[Rh(diene)(H_20)_2]X$ .
- 2.4 The subject-matter of claims 7-15, as presently interpreted and examined (see section

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Non-establishment of Opinion), is therefore novel (Art. 33(2) PCT).

#### **Inventive Step:**

- 1. Notwithstanding the objection of lack of novelty, the following further observations are made regarding inventive step, should the applicant in a later stage be able to delimit the subject-matter vs. the prior art.
- 2.1 The **problem to be solved** by the present invention, as set out in the present application on page 1, paras. 3-5 in conjunction with page 8, last para. to page 9, para. 3 may therefore be regarded as to provide cationic (diene)Rh(I) complexes for use as catalysts or precursors thereto, in particular catalytic hydrogenation of C-C, C-O, C-N or N-N double bonds, hydroformylation or hydrosilylation.
- 2.2 Since no experimental data is provided in the present application with respect to this use in catalysis and in view of the fact that a catalytic action is a priori not derivable from a chemical formula, it is at present not credible that this chemical problem is solved. Since the presence of an inventive step would depend on such a catalytic action as the effect of the compound claimed in claim 1 (and the thereupon dependent claims 2-6), this effect needs to be demonstrated. The same reasoning applies with respect to the use of these compounds according to claim 14 and the final catalyst products resulting from the catalyst preparation use according to claim 15. Otherwise the only problem recognizable as having been in fact solved would be the provision of further chemical compounds, which is devoid of inventive merit, since inherent to the chemist's customary practice (cf. Decision of the EPO Technical Boards of Appeal T 939/92).
- 2.3 Such an effect must be based on the disclosure of the original application, i.e. the *effect* must be demonstrated for the originally envisioned catalytic reactions (see section Non-establishment of Opinion).
  - The same applies if the argumentation of the applicant should be based on the achievement of a surprising effect, i.e. later filed additional experiments cannot be used for this purpose. Only for the verification of originally invoked effects may such further worked examples be used. The applicant's attention is drawn to established case law of the EPO Boards of Appeal in this respect, confirmed by the recent decision G 1/03 of the

EPO Enlarged Board of Appeal (see point 2.3.3 of the reasons therein). Hence the *effects* demonstrated in **D5-D7** (see section Certain Documents Cited) *may not be used*, since these are derived from a *different catalytic reaction*, (di)enyne cyclisations.

- 2.4 Since any inventive merit hinges on the compounds of claim 1, a process for preparing such compounds as claimed in claim 7 and the thereupon dependent claims 8-13, even if not foreshadowed by the prior art, will only involve an inventive step if these compounds, known or novel, serve a technical non-trivial purpose.
- 2.5 The present application does therefore not meet the criterion set forth in Article 33(3) PCT, as the subject-matter of claims 1-15 does not appear to involve an inventive step.
- 3. Should the applicant be able to overcome the fundamental deficiencies mentioned in items 2.2-2.3 above, his attention is drawn to the following brief evaluation of the content of documents **D1-D4** with respect to the presently claimed subject-matter.
- 3.1 Neither **D1** nor **D2** foreshadows the envisioned use of the claimed compounds according to claims **14** or **15**, as presently interpreted and examined (see section Non-establishment of Opinion).
- 3.2 For this reason, the **crystalline** compounds of claim 1 (= possible delimitation from **D1**) would also not be foreshadowed by **D1**.
- 3.3 The preparation process of claim 7 is not foreshadowed by D1 or D2.
- With respect to the preparation use claimed in claim 15, the objective technical problem vis-à-vis D3 or D4 would be to provide an alternative preparation for heterogenous catalysts suitable for *inter alia* hydrogenation using likewise a cationic (diene)Rh(I) precursor.

As a mere alternative precursor comprised in the generic disclosure of D3 and in the absence of surprising effects, the use of the compounds of claim 1 in preparing heterogenous catalysts would be foreshadowed by the teaching of D3. This is all the more apparent in view of the same preference for the cod ligand in D3. Moreover the

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skilled person, based on his common general knowledge, would *a priori* expect the members of the family of cationic (diene)Rh(I) compounds comprising further ligands of at most the same bonding strength (e.g. diene, solvent) to be interchangeably usable if only ligand exchange of these further ligands is concerned. The water ligand is known as a weak ligand, e.g. from D1, which additionally teaches that the H<sub>2</sub>O ligands are labile and readily displaced by stronger ligands, e.g. phosphines (cf. pages 915-916) or tosylate in organic solvents upon slow crystallization.

Document **D4**, on the other hand, uses specifically the **same complex** but *devoid of complexed water*. In view of the arguments given with respect to **D3** and common general knowledge, the presently claimed bisaquo analogues are a **clear alternative** for the skilled person to the specifically used precursor in **D4**.

- 3.5 Should the applicant argue that the terminology "in catalytic reactions" in claim 14 includes the use of the defined complex as a precursor for the preparation of the actual catalyst, including in situ preparation, which in turn is to perform a given catalytic reaction, then D3 and D4 would be relevant for this claim as well, as detailed in the preceding item.
  - In case typical **homogenous** reactions with asymmetric ligands are concerned, **D3** is particularly relevant. It discloses a broad range of ligands for use with the preferred cationic (diene)Rh(I) precursors by ligand exchange (cf. page 3, line 2 to page 4, line 5; page 6, lines 2-13). Although only the immobilized catalyst complexes are exemplified, it is common general knowledge that their homogenous congeners are likewise catalytically active (this obviously being a prerequisite for heterogenization attempts), albeit possibly with different results. It is also common general knowledge that the disclosed ligand exchange on the heterogenized precusors may be performed in the same way with the corresponding homogenous precursors. **D3** would thus **foreshadow** such subject-matter, in view of the arguments given with respect to **D3** and common general knowledge in item 3.4 above.
- In view of items 3.4 and 3.5, if the only effect of the compounds claimed in claim 1 and the thereupon dependent claims 2-6 resides in their general suitability as catalyst precursors, absent of surprising effects, then these could only be considered as alternatives foreshadowed by D3 or D4 and common general knowledge or by either of D3 or D4 in combination with D1 and common general knowledge.

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#### **Certain Documents Cited:**

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- 1. Documents **D5-D6**, both by the present inventors, disclose the exact **same complexes** as presently claimed, in **crystalline form**, **made by the same process** (referring to the priority document of the present application). The complexes are used in *enyne cyclisations*. Heterogenous systems are *not disclosed*.

  In view of the above examination restrictions, the subject-matter of claims **1-13** of the present application is disclosed by these documents.
- 2. Document **D7** discloses a catalyst system for *dienyne cyclisations*. The system is generated by reaction of SDS and [(Rh(diene)Cl)<sub>2</sub>] in water (diene= cod, nbd), in the *absence of Ag salts*, and formulated as [Rh(diene)(H<sub>2</sub>O)<sub>n</sub>]SDS, wherein SDS associates into a micellar structure, i.e. a polyvalent non-coordinating anion. A value for "n" is *not specified*, nor are the *catalytically active species separated*. **D7** further teaches the great technical significance of cationic Rh catalysts for catalytic (asymmetric) hydrogenation, hydrosilylation, referring to a technical encyclopedia.
- 3. Although **D5-D6** would be novelty destroying for the mentioned claims and **D7** would be relevant for inventive step for at least claim 1, these documents are not considered as state of the art within the PCT procedure under the *assumption that the priority claimed in the present application is valid*.
- 4. In the regional phase before the EPO, however, these documents will be considered as state of the art under Art. 54(2) EPC if the priority date cannot be validly claimed.



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Our Ref.: G5466 EP

Munich, March 23, 2006 WR/RA/ISS

Further to our petition dated March 8, 2006 in the above-identified patent application, we herewith enclose two corrected Notifications of the Recording of a Change issued by the International Bureau of WIPO.

European Patent Attorney

Enclosure:

As mentioned above

	From the INTERNATIONAL BUREAU
PCT	To:
NOTIFICATION OF THE RECORDING OF A CHANGE  (PCT Rule 92bis.1 and Administrative Instructions, Section 422)  Date of mailing (day/month/year)	VOSSIUS & PARTNERG E GALLEN Siebertstrasse 4 Vossius & Partner 81675 Munich Germany 2 1. März 2005
16 March 2006 (16.03.2006)	Frist bearb.: afr
Applicant's or agent's file reference G5466 PCT	IMPORTANT NOTIFICATION
International application No. PCT/EP2004/008964	International filing date (day/month/year) 10 August 2004 (10.08.2004)
1. The following indications appeared on record concerning:    X   the applicant   X   the inventor	the agent the common representative
Name and Address	State of Nationality State of Residence
	Telephone No.
•	Facsimile No.
	Teleprinter No.
2. The International Bureau hereby notifies the applicant that t	the following change has been recorded concerning:
the person the name the add	ddress the nationality the residence
Name and Address KARCH, Ralf	State of Nationality State of Residence DE DE
Käthe-Koliwitz-Strasse 24 63801 Kleinostheim	Telephone No.
Germany	Facsimile No.
	Teleprinter No.
3. Further observations, if necessary: The person identified in Box 2 has been recorde America only and inventor for all designated Sta	ed as applicant for the United States of tates.
4. A copy of this notification has been sent to:	
X the receiving Office	X the designated Offices concerned
the International Searching Authority	the elected Offices concerned
the International Preliminary Examining Authority	other:
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Patrick VILLECHAISE (Fax 338 897)
Facsimile No. (41-22) 338.89.70	Telephone No. (41-22) 338 8395

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PCT	To:	
NOTIFICATION OF THE RECORDING OF A CHANGE	VOSSIUS & PARTNERSIUS & Partie	
(PCT Rule 92bis.1 and Administrative Instructions, Section 422)	Siebertstrasse 4 81675 Munich 2 1. März 2005 Germany	
Date of mailing (day/month/year) 16 March 2006 (16.03.2006)	bearb.:	
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International application No. PCT/EP2004/008964	International filing date (day/month/year) 10 August 2004 (10.08.2004)	
The following indications appeared on record concerning:      X the applicant      X the inventor	the agent the common representative	
Name and Address	State of Nationality State of Residence	
	Telephone No.	
,	Facsimile No.	
	Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the X the person the name the add		
Name and Address BRIEL, Oliver Tulpephofstrasse 25	State of Nationality State of Residence DE DE	
Tulpenhofstrasse 25 63067 Offenbach Germany	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
3. Further observations, if necessary: The person identified in Box 2 has been recorded as applicant for the United States of America only and inventor for all designated States.		
4. A copy of this notification has been sent to:		
X the receiving Office	X the designated Offices concerned	
the International Searching Authority	the elected Offices concerned	
the International Preliminary Examining Authority	other:	
The International Bureau of WIPO	Authorized officer	
34, chemin des Colombettes 1211 Geneva 20, Switzerland	Patrick VILLECHAISE (Fax 338 8970	
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	From the INTERNATIONAL BUREAU
PCT	To:
NOTIFICATION OF THE RECORDING OF A CHANGE  (PCT Rule 92bis.1 and Administrative Instructions, Section 422)	VOSSIUS & PARTNER Siebertstrasse 4 81675 Munich Germany
Date of mailing (day/month/year)  16 March 2006 (16.03.2006)	
Applicant's or agent's file reference G5466 PCT	IMPORTANT NOTIFICATION
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1. The following indications appeared on record concerning:    X   the applicant   X   the inventor   The agent   The common representative   The agent   The common representative   The agent   The	
Name and Address	State of Nationality State of Residence
Telephone No.	
Facsimile No.	
	Teleprinter No.
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:  X the person the name the address the nationality the residence	
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Germany 28. 03. 20	06 Facsimile No.
TEAM 14	Teleprinter No.
3. Further observations, if necessary: The person identified in Box 2 has been recorded as applicant for the United States of America only and inventor for all designated States.	
4. A copy of this notification has been sent to:	
X the receiving Office	X the designated Offices concerned
the International Searching Authority	the elected Offices concerned
the International Preliminary Examining Authority	other:
The International Bureau of WIPO	Authorized officer
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